The Benefits of Vehicle-Mounted Video Recording Systems

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INTRODUCTION

This document will explore the topic of **Vehicle-Mounted Video Recording Systems** and the potential benefits they will provide to the Transportation, Law Enforcement and Insurance Industries. Currently, there is technology available that will permit the development and deployment of Vehicle-Mounted Video Recording Systems, however this technology is not being effectively utilized. It is the belief of the author, that the introduction of such recording systems would offer numerous benefits to all entities concerned with transportation safety and efficiency.

The current methods of accident investigation and re-construction being used by the Transportation Industry are inefficient and outdated, based on today's technology. This paper will examine current methods of transportation recording and accident investigation, while pointing out the potential benefits of Vehicle-Mounted Video Recording Systems.

MAIN SECTION

CURRENT METHODS OF ACCIDENT INVESTIGATION

Accident investigations are typically conducted by three types of entities including Government Agencies, Law Enforcement/Police Officers, and Insurance Companies. Each of these entities may tend to investigate an accident from a different perspective or for different purposes, however they all have one common goal. That goal is to determine the exact cause of an accident, based on the best information available to them.

The data gathered after an accident occurs consists of background information, physical evidence at the scene, eyewitness accounts, and data stored in transportation recording devices. Each accident that occurs is unique in the information it provides for investigators. All accident investigations will have some degree of background information and physical evidence available for review. Others will provide eyewitness accounts of what occurred, however this information is subject to individual perceptions and opinions and therefore, cannot be completely relied upon. (In many cases, eyewitnesses will give conflicting reports of the same accident.) Another source of information available to investigators is data retrieved from Transportation Recorders. This type of data is present in Flight Data Recorders, Marine Trip Recorders, Railroad Trip Recorders and recently, in Trip Recorders found in larger commercial trucks. Although these recorders do in fact provide a wealth of information to investigators, they tend to concentrate only on data collection such as speed, direction, mechanical conditions and geographic locations of vehicles. This data is then used to assist in re-constructing the events leading up to an accident, so the exact cause can ultimately be determined.

The problem with current accident investigation methods is that investigators are forced to rely on accident **re**-construction methods, with only limited information available. This is especially true with highway vehicle accidents, which often occur without witnesses and where no transportation recording devices are present. Future Transportation Recorders for all modes of transportation, should focus on gathering as much information as possible before an accident occurs, and concentrate on accident event **construction**, rather than **re**-construction.

VEHICLE-MOUNTED VIDEO RECORDING SYSTEMS

Development of new technologies including the **Secure, Vehicle-Mounted, Incident Recording System**, will have a drastic impact on the future of transportation recorders. New technology will allow recording of live video from multiple cameras into a transportation recording device. This information, coupled with extensive mechanical data taken from a vehicle's instruments, would provide investigators with a highly accurate record of the events surrounding an accident. Investigators would be able to actually see, frame by frame, the events leading up to and including the actual collision or mishap, and in most cases even the moments following the actual impact. The main purpose of the system would be to capture an unimpeachable record of the events surrounding an accident and format it to be accessible only by proper authorities. This inter-modal recording system could be installed in almost any type of vehicle including trucks, cars, aircraft, marine vehicles and railroad vehicles.

These types of recording systems would have to be of a secure nature, in order to prevent the tampering of critical evidence. The recording device would also have to be housed in a crashproof, fireproof and waterproof enclosure, similar to those used in commercial aircraft, but smaller in scale. The system would capture actual video footage of a vehicle's travels and securely store an accident recording until it could be accessed by authorities. Several different camera angles could be captured simultaneously, including front, rear and side views from a vehicle. By utilizing secure data codes, authorities could feasibly access the recording device and watch a video replay of an accident, minutes after its occurrence. This type of system would also provide authorities with a permanent visual record of the incident, as it actually developed and occurred.

BENEFITS OF VEHICLE-MOUNTED, VIDEO RECORDING SYSTEMS

The potential benefits of utilizing Vehicle-Mounted, Video Recording Systems are numerous. They could assist all entities involved in accident investigations, including Police Officers, Government Agencies, Insurance Companies and adjusters, and Self-Insured Fleets. Use of such systems would streamline the entire accident investigation process for all parties concerned. By having access to actual video footage of an incident, Investigators would not have to rely solely on information gathered after the accident occurred, or on accounts from witnesses. The Video Recording System would not be a substitute for current methods of investigation, but would serve to enhance and compound the effectiveness of all data gathered from an accident. This type of collective data would promote a much more accurate and scientific analysis of the events surrounding an accident. Higher quality data and analysis would assist in the future mitigation of all types of transportation accidents and their associated human and economic losses.

Government Agencies

Vehicle-Mounted, Video Recording Systems would assist Governmental Agencies in streamlining their current methods of accident investigation and re-construction. Currently, governments spend large sums of money attempting to determine where, how and why a commercial aircraft crashed. Much time, money and effort is focused on re-constructing the aircraft and/or the event in order to determine the exact cause of the crash. With the use of a video transportation recording system, Investigators may have the opportunity to actually **see** what occurred, and this could potentially shorten the investigation thereby saving time, effort and money in the process. As in any investigation, the lapse of time from the initial occurrence is detrimental to the investigation. This is especially true with large-scale disasters such as Commercial Aircraft crashes, where critical pieces of evidence are lost to fire or explosion, or sink to the bottom of the ocean. Any successful attempt to expedite the completion of a large-scale accident investigation would result in substantial savings of money and manpower associated with it. In addition, a Vehicle-mounted Video Recording Device would provide the Agency with more reliable data than could have been gathered in its absence.

Law Enforcement

Police Officers are involved in millions of automobile accident investigations annually, in the U.S. alone. They have a multi-task duty of responding to the scene quickly, securing the accident scene, assisting the injured, investigating the accident cause, and in some cases determining culpability. Many times there are no witnesses present at an accident scene. Other times there will be conflicting versions by both witnesses and drivers, as to what actually occurred. Due to the traumatic nature of many automobile accidents, police are unable to interview the parties involved, or to gather reliable information from those that are interviewed. This is due to the different perceptions that each individual has as to the circumstances he or she witnessed. Other factors such as weather, traffic, and safety concerns can seriously hamper the effectiveness of an accident investigation.

If a police officer had access to a Vehicle-Mounted Video Recording System following a crash, the officer could potentially access the system within minutes of the crash. The officer could then watch a video replay of the incident as it actually occurred. This in turn would allow the officer to see what most of the circumstances were surrounding the incident including, traffic controls, location of other vehicles, lighting conditions, road conditions, weather conditions, visual obstacles or many other contributing factors. Instead of relying solely on second-hand information, conflicting drivers' accounts and witness accounts, the officer could see first-hand, what actually occurred.

By having a video file of the accident to review , the officer could then complete his investigation in a much shorter time period than is now required. The officer could also issue citations with confidence in determining which party was at fault. Further benefits of this feature would be increased safety of the officer and accident parties through expedited accident clean-up and less disruption to traffic. A faster investigation would also free the officer to return to other duties more quickly.

Insurance Companies

It is estimated by the Insurance Industry that there were over 35 million automobile accidents in 1997 in the U.S. costing $123.7 billion. A majority of these accidents are investigated by the Insurance Industry regardless of prior Law Enforcement investigations. Insurance Companies incur a myriad of costs involved with the investigation and settlement of accident claims. Some of these costs include property damage payments, damage appraisals, scene investigations, police reports, vehicle storage fees, rental car expense, fraud investigation, forensics studies, arbitration, litigation costs and general operations and payroll costs.

Another major factor that affects the Insurance Industry is casualty insurance fraud. It is estimated that 10% of all casualty claims filed are fraudulent and account for nearly $13 billion in losses annually for U.S. Insurance Companies. Since these losses tend to get passed on to the consumer, it is also estimated that insurance fraud costs the average household $200 to $300 a year in premiums.

Insurance Companies and their policyholders could benefit substantially through the use of Vehicle-Mounted Video Recording Systems. Some of the potential benefits are:

- First hand physical evidence of accident circumstances
- Concrete evidence to fight fraudulent claims
- Lower insurance premiums due to increased efficiency
- A deterrent to accident fraud, due to increased risk of prosecution
- A reduction in the cost of insurance company operations
- Protection of innocent drivers' deductibles and driving records
- Fewer and shorter recorded statements needed by insurance companies
- Higher quality customer service for policyholders and claimants
- Video evidence of hit and run incidents
- Decreased expenses for damaged vehicle storage fees
- Lower car rental expenses due to shorter liability determinations
- More accurate loss reserves for insurance companies and their agents
- Fewer scene investigations required by insurers
- Lower expenses for Special Investigation Units
- Additional evidence for use by Special Investigation Units
- More reliable evidence for arbitration hearings
- A reduction in the number of forensics studies required in low- velocity impacts
- A reduction in Road Rage due to accountability
- Fewer court cases resulting from car accidents
- Fewer "Bad Faith" claims against insurance companies

Overall, the use of Vehicle-Mounted Video Recording Systems will benefit the Insurance Industry as a whole, through increased operational efficiency and a reduction in fraudulent claim losses.

A Case in Point

As of this writing, investigators from the National Transportation Safety Board are reviewing a tragic accident between an Amtrak train and a tractor-trailer outside of Chicago, IL. (USA), in which at least 11 people have died and numerous more are seriously injured. A tractor-trailer hauling a load of steel was attempting to cross the train tracks when the Amtrak train carrying 217 passengers, collided with the trailer. The engineer and truck driver both survived the accident and both have given very different accounts of what occurred just prior to the crash.

The truck driver stated that he entered the crossing and that the gates and signals were not down but became operational after he had already entered the tracks. Contrarily, the train engineer maintains that he saw the signals operating correctly and that the truck was stopped, but then that it began to proceed over the tracks illegally. Preliminary investigation is focusing on tire tracks that would indicate the possibility that the truck proceeded around the crossing gates and onto the tracks. Investigators have reviewed the information provided by the train's "black box", and have determined that the train was traveling at a legal speed and attempted to brake before the impact. Although this information is useful, there are still many unanswered questions as the investigation continues.

Assuming that either vehicle or both vehicles involved in this accident had a **Secure, Vehicle-Mounted, Incident Recording System** on board, investigators would already know exactly what occurred. A video system on board the train would have shown the view that the engineer had just prior to the crash and would prove his story either correct or incorrect. A video system on board the truck also would have shown the view that the truck driver had prior to entering the tracks. If both vehicles had on board video recording systems, the NTSB would have a near perfect record of the incident from both drivers' perspectives, and would be able to complete the investigation more accurately and efficiently. If only one of the vehicles involved had such a system, investigators would still have been provided with enough additional information to determine the cause of the crash, based on the video evidence available.

CONCLUSIONS

Future Transportation Recording Technologies should focus on gathering video evidence of accidents as they occur. The current methods of accident investigation in place rely on accident re-construction with limited information available. With the use of Vehicle-Mounted Video Recording Systems, investigators would have a secure, video recording of accidents to review. The additional information provided by this type of system, would streamline the investigation process and allow investigators to complete their job more accurately and efficiently. This developing technology is inter-modal and can be installed in all types of vehicles including automobiles, trucks, trains, ships and aircraft. Government Agencies, Law Enforcement Officers and Insurance Companies would all benefit from the use of such systems. The main benefits provided by such systems would be a drastically increased efficiency in the accident investigation process, economic savings, and more accurate data which could be used in the future mitigation of the human and economic loss associated with transportation accidents of all types.

REFERENCES

1. Insurance Information Institute 1999 Factbook
2. National Transportation Safety Board
3. National Highway Transportation Safety Administration

AUTHOR'S BIOGRAPHY

R. Jeffrey Scaman is CEO of Evicam International, Inc. and inventor of the **Secure, Vehicle-Mounted, Incident Recording System**, also known as the "**EVICAM**", an acronym for *evidence camera*. Mr. Scaman has prior experience is project management, data analysis and claims adjudication. He has personally investigated hundreds of automobile accidents, with emphasis on auto-theft and fraud investigations. His past experiences inspired him to begin focusing his efforts on developing Vehicle-Mounted Video Recording Technologies.